Wildlife Habitat as it relates to Forestry

Wildlife and the forests in which they live are linked closely together. The abundance of most wildlife populations and associated forested lands has paralleled each other throughout history. Responsible forest management ensures a balance between wildlife populations and their forested habitats. The website for the New Mexico Department of Game and Fish and the web address for the list of threatened or endangered species in New Mexico are posted below. For additional information on wildlife in New Mexico please visit their website.

http://www.wildlife.state.nm.us/

http://www.bison-m.org/reports.aspx?rtype=13&status=%27201%27,%27202%27

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http://www.envirothonpa.org/documents/ForestSuccession.pdf

Forest Succession and Wildlife

If undisturbed, an open field over time will be invaded by shrubs, which in turn will be replaced by saplings, young trees, and eventually a mature forest. Foresters often refer to these phases as the grass and forbs stage, shrub and sapling stage, pole stage, and mature forest. In general, plant communities progress in an orderly and predictable manner known as forest succession. However, the rate of forest succession on any one property is difficult to predict and may vary with soil conditions, topography, frequency of natural disturbance, number of deer, and amount of competing vegetation. The abundance and kinds of wildlife also change as a forest matures, because the quantity and quality of food, water, cover, and space are changing. Young forests, for example, often have an abundance of berry-producing shrubs and brushy cover, but few hard mast (acorns, hickory nuts) or cavity trees. As a result, species that feed on acorns (e.g. squirrels) or nest in large decaying trees (e.g., certain wood-peckers) are much more abundant in older forests. Mule deer and elk use several stages of plant succession. Deer need the cover provided by thickets of shrubs and saplings, but they also feed extensively on acorns found under trees in a mature forest and seek out succulent green vegetation and grains in agricultural fields. Providing the correct stage or stages of plant succession in the right amount and distribution is the key to attracting wildlife to your property. Whether you wish to manage your land for a variety of wildlife species or for a single species, you will need to know what stage(s) of forest succession each species depends on for food and cover.

VERTICAL AND STRUCTURAL DIVERSITY

As a forest changes through succession, its structure also changes. Vertical structure is important because in a forest with a well-developed overstory, understory, shrub, and herbaceous strata, a diverse array of plants and animals can coexist. Maintaining vertical structure guarantees that a large variety of wildlife will be present. Many wildlife species, particularly birds, divide the habitat vertically. For example, ovenbirds, scarlet tanagers, and chickadees are all found in mature forests, but ovenbirds feed mostly on the ground,

tanagers prefer the canopy top, and chickadees like intermediate heights. More species are able to coexist in a forest with multiple layers than in a forest where all the trees are the same height. Vertical diversity is greatest in forests with a large variety of trees of different ages. Within similar forests, vertical diversity is greater in areas with few deer. Large deer populations often browse and remove the lower stratum of vegetation. Structural diversity refers to the variety, size, and shape of both living and nonliving organisms. Large standing and fallen dead trees, plant species diversity, and vertical diversity all contribute to structural diversity in the forest. Many elements of structural diversity, such as rotting logs and snags, provide hiding places for wildlife and attract insects and fungi which serve as food for wildlife. These elements make a very large contribution to the species richness and ecology of an area.

Resources

- Wildlife of NM – ignore the fact that these two are coloring books – they are useful as keys for identifying species and their distribution.
  http://www.wildlife.state.nm.us/publications/documents/coloringbook/wildlife.pdf
  http://www.wildlife.state.nm.us/publications/documents/coloringbook/aquatic.pdf

- Woodland wildlife management – PA
  http://www.envirothonpa.org/documents/PAWoodlandsNumber6.pdf

(from NM Forest Practices Guidelines)

WHAT ARE RIPARIAN AND WETLAND AREAS?

Riparian areas in New Mexico are critical wildlife habitat. Riparian areas are often defined as transition zones between aquatic and upland environments. Riparian areas have distinct and often

Major components of a stream or water body riparian area—Riparian areas can be symmetrical or asymmetrical in shape. The topography and hydrogeology determine the plant and animal communities associated with the width or meandering riparian area configurations.

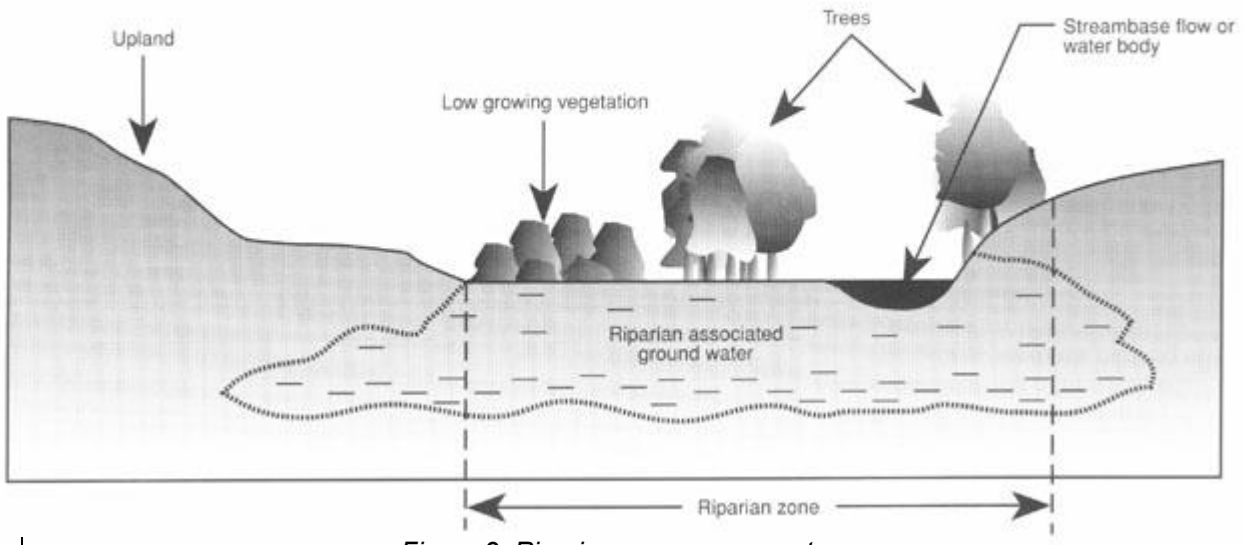


Figure 2. Riparian area components

different vegetation from uplands but possess characteristics of both aquatic and upland habitats and are the sites of significant material, nutrient, and energy transfer between aquatic and upland habitats. Riparian areas are supported by perennial and intermittent streams, where the water supply to drive these important functions is typically available at or near the surface, and may also be found in ephemeral drainages where water is available only after rainfall events or snowmelt.

The number of ecological functions and processes, and the degree to which they are served, are much greater in perennial and intermittent streams than in ephemeral streams. Therefore, management, restoration, and regulatory emphasis and/or priority should be placed on perennial and intermittent streams. The ecological and economic importance of riparian areas far outweighs their representation in the arid western landscape. Usually, distinct differences in vegetation community composition and structure make delineation of riparian areas fairly straightforward. If during planning the harvest it is uncertain whether an area is a riparian area, planners should consult a resource professional, such as foresters at the nearest District Office.

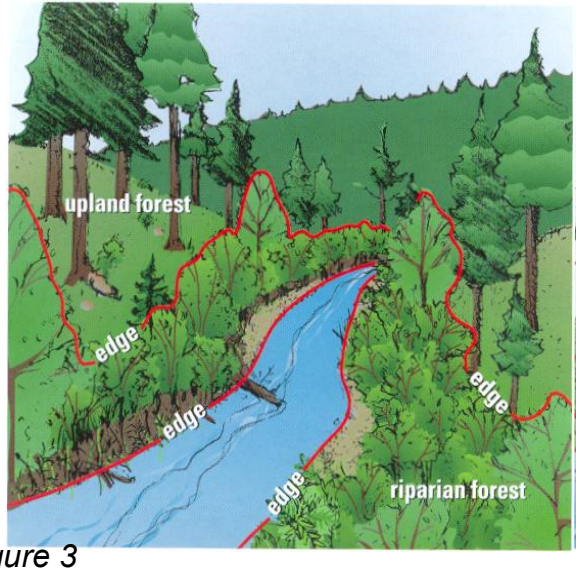
Wetlands have the following characteristics:
(1) at least periodically the land supports predominantly hydrophytes; (2) the substrate is predominantly undrained hydric soil; and (3) the substrate is non-soil and is saturated with water or covered by shallow water at some time during the growing season of each year. *Note: hydrophytes are plants capable of growing in water or waterlogged soils/substrates; hydric soils are waterlogged soils that support plant growth; non-soil is a non-vegetated substrate like a mudflat or rock outcrop.*

Both riparian areas and wetlands contain different plants than the adjacent areas. In some places the transition from the riparian or wetland area is a sharp contrast and other times it is less noticeable. Please contact the nearest District Office for assistance in defining riparian and wetland areas and their management concerns. More information can also be found on the Forestry Division website: www.nmforestry.com, under Forest Management.

What Makes Riparian and Wetland Areas Unique?

Their mix of water, plant cover, and food is rare and diverse compared to the rest of the watershed. For some animals, the presence of water makes a riparian or wetland area their preferred or solo habitat. Most amphibians live on land and return to water to breed, spending much of their lives in these areas. Open water and a high water table combine to produce higher humidity, more shade and unique air movement. Frequently, riparian and wetland areas support a greater number of individuals, as well as a greater number of species, when compared to other parts of the watershed. Furthermore, the wet soils of a riparian or wetland area encourage the growth of soil microbes that can break down chemical pollutants into harmless organic compounds, thus filtering polluted water.

Many birds use riparian areas for breeding. Others hunt in healthy riparian areas where food and cover are abundant. The reason is that riparian and wetland areas supply a great variety of plants needed by birds and other wildlife. Grasses, shrubs, vines, and trees all grow well in the moist fertile soil. Turtles, beaver, muskrats, and water snakes thrive in these areas. Deer, wood duck, and bear feed and seek cover in the thick vegetation. Eagles, owls, and songbirds occupy the trees. Pools supply breeding sites for frogs, toads, and insects. Our streams and waterways are also well-traveled wildlife corridors connecting one area to another.



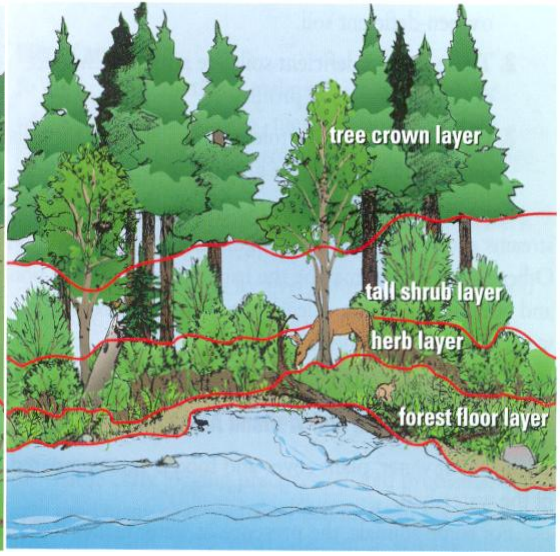


Figure 3

Two edges in stream riparian and wetland areas.

The multi-layered, vertical and horizontal plant canopy offers a variety of nesting, resting, feeding, and wildlife reproduction areas. The tree canopy layer shades the water, keeping it cool.

EDGES AND LAYERS IN RIPARIAN / WETLAND AREAS

An "edge" is where two different plant groups come together. In riparian and wetland areas there are two obvious edges. One occurs where riparian and wetland plants meet aquatic plants at the water's edge. The other is where riparian and wetland forest plants end and upland forest plants begin.

Edges give animals easy access to more than one environment. They offer greater variety of plant cover and more abundant food. For some animals, edges can be traps; places where they venture to feed or rest and are picked off by waiting predators.

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http://www.lrconline.com/Extension_Notes_English/pdf/cvtytrs.pdf

Cavity Trees and Snags

Cavity trees are living trees which have internal cavities. These cavities are created by injury, disease, woodpeckers, or loss of large limbs. The best cavity trees have healthy crowns; a cavity protected from rain, and may provide multiple benefits, including multiple dens and mast production, or contain woodpecker nests on large dead limbs. Because of the long time period required to produce a cavity tree, both existing and potential cavity trees with healthy crowns should be retained through any rotation to provide adequate den sites while a new stand is developing. Actively used cavities can be identified by smoothly worn entrance holes (bird nest), fresh gnawing around the entrance (mammal den), or observation of wildlife use. These should be retained, and additional trees with cavity potential may be left to achieve your objective. Cavities usually occur in tree crowns and may affect less than 20 percent of total board foot volume.

Cavity tree

Snag

However, the retention of living cavity trees without timber value occupies growing space that could be devoted to a crop tree. But with careful selection, the best cavity trees only take a small proportion of the available growing space in the stand. Many rough cull and rotten cull trees are not good "den trees" for wildlife and may be removed from the stand.

Snags are dead trees at least 10 feet tall and at least 6 inches DBH (Diameter Breast High). They provide perches for singing, hunting, foraging, resting, and roosting, as well as foraging sites for insect-eating birds and mammals. In addition, woodpeckers, flickers, chickadees can excavate cavities in these trees. Snags provide many of the benefits of cavity trees, such as shelter, areas for roosting, hiding, and nesting. In addition, secondary cavity users, which include many species of birds, mammals, reptiles, and amphibians, will also use these trees. Evenly distributed snags and cavity trees are needed in each habitat type (Figure 1).

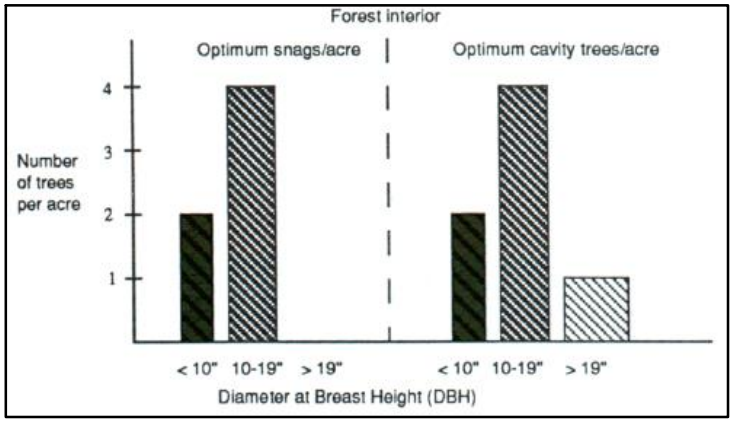

Figure 1. Proportions of snags and cavity trees per acre in each DBH class for forest interiors.

Many wildlife species use the cavities found in snags or living trees for shelter. Many species of cavity users have specific preferences for living or dead trees, while others will use both. Due to the variation in size of these animals, cavities of varying diameters are needed to accommodate them. In addition, these cavity-using wildlife species may have specific preferences for heavily forested, semi-open, open, bottom-land hardwood, or riparian habitats.

Since living cavity trees are scarcer than dead trees, they should be given preference when choosing trees to meet cavity objectives. Snag trees result from natural mortality and timber stand improvement operations. Thus, when selecting trees to remain as cavity trees, select species with long life spans that attain large diameters. Also, choose trees with healthy crowns that are likely to remain in the stand for a long time. If a sufficient number of existing cavity trees are not available, select large trees which show cavity potential. Over mature trees or trees with woodpecker holes, physical damage, fungal infections, dead portions, or trees stressed by mechanical damage or disease are all good candidates. Choose trees larger than 19 inches DBH to deaden, while leaving an adequate number of live trees in this size class.

In order to accommodate the needs of the widest variety of wildlife species, a mixture of cavity and snag trees of the proper sizes (Figure 1) should be left in each stand. For best results, these structures should occur in both openings and mature forests. The retention of snags has little effect on the growth of desirable trees. In fact, leaving these trees in the stand saves time and money often spent on removal. In addition, the insect eating bird and mammal species these snags attract play a role in controlling insect pests in your woods. In New Mexico forests, the retention of three to five wildlife trees (snags and cavity trees) per acre is recommended.